

GELLED ACID

Abstract

Reducing agents or reducing agent precursors are provided for breaking ferric ion crosslinks in polymers in gelled acids used for diversion in matrix acidizing and used for leakoff control in acid fracturing. Previous reducing agents were very toxic to aquatic species or so active that they could be used only at low temperatures. The new reducing agents and reducing agent precursors are less reactive, less toxic, and leave less residue behind to impede fluid flow after the gel is broken after the treatment. Suitable compounds are sources of one or two hydrazines or sources of hydroxylamine. Such compounds are carbohydrazides, semicarbohydrazides, ketoximes, and aldoximes.